Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

occupations or trades that contribute daily to furnish necessities and comforts at our doors. All these processes have an inherent interest for little children. How do they show it? Will these interests be food enough to furnish nutrition for mind growth throughout an entire year? Will the pursuance of them give moral and æsthetic impulses a chance for expression? Will it bring the oldest and youngest into natural co-operation?

Record all the plays you see of any children between the ages of three and ten years and note in each instance the subject, development, and manner of execution.

3. Differentiation of subjects: The point at which children begin to show their interests in different forms is valuable for the teacher's study. It is a question whether the larger subjects that are taken up in the school enter into the kindergarten. (a) Where are the beginnings of history, sociology, language, and domestic economy to be found? Have they a germinal phase of interest for the kindergarten child? Examine recorded plays with these questions in mind. (b) How do the youngest children begin nature study? Meteorology? Geology? Physiology? Botany? Zoölogy? Physics? Is the beginning of interest in all these phases of nature shown in any characteristic ways? Note and record instances of observations and experiments made from their own initiative by little children.

The subject of materials and playthings will be taken up in January.

Pedagogics of Nature Study

Wilbur S. Jackman

Observation

All education rests upon observation. Whether it is in the domain of Natural Science, where, obviously, all knowledge is gained by presentation of objects and phenomena to the senses, or in the field of History, where the lessons are to be interpreted and applied to life in its present condition, observation is of fundamental importance.

Observation is the mother of inference; given the former, and the latter is inevitable. Nothing points more clearly to the distinct personality of each human being than the fact that no two persons will make exactly the same inference regarding an object which they observe in common. Each observes from a point of view that is slightly different from that occupied by the other and his inferences vary accordingly. This may lead to endless contention; but discussion respecting the meaning of facts is always healthy until those engaged refuse to repeat their observations that their inferences may be corrected.

The natural test for the extent and correctness of an observation lies in the expression which the individual is able to give respecting it. While it is not uncommon for one to say that he sees and knows more than he can express, it is doubtful if this is ever true. The technique of expression in all its forms is exceedingly simple. For instance, in expressing himself through a drawing, the pupil is required to do so by means of lines, straight and curved, which he can draw with little or no trouble. The real difficulty lies in putting the lines together at the proper angle and in their right relations. But this does not belong to the technique of expression; the inability to represent by drawing must be referred, therefore, to the fact that the image is indistinct as a result of insufficient observation.

Again, in language, it is possible to describe things, most complex, by the use of words that are employed in common speech; yet it is not uncommon for pupils to say that they can see more than they can tell, although their ability to talk may be beyond question.

In modeling, the clay is most plastic. It readily yields to treatment, but there are comparatively few who can bring it into a form which belongs to the object observed. This is clearly not the fault of the material used, nor of the ability of the pupil to mold it, but the difficulty lies rather in an imperfect image that has been obtained through faulty or deficient observation.

The accuracy and the extent of an observation depend upon the purpose which controls the one who is making it. It is usually true that the desired knowledge concerning an object may be obtained through a partial examination and the observation upon this point will be clear in proportion to the importance of the knowledge. All other knowledge of the object, which is absolutely necessary if we are to have an image of it clear enough to enable us to fully represent it by any of the means of expression, is weak and defective because the observation has not been intense.

Drawing, painting, modeling, etc., are difficult, therefore, because they require an accuracy and extent of observation which is not considered absolutely necessary by most people. For example, one may know, for all practical purposes of his life, the house in which he lives, and yet he may be utterly unable to represent that house in a drawing. That is, while he might know the proper number of windows in the front, he would fail, perhaps, in getting the due proportions of each window, and this would be because that particular observation had never been called out by any function that the house or window had peformed for him. The window allowed light to come into the interior, and he learned to know it from this function, but he learned nothing more.

So in the study of a tree. The lumberman recognizes a tree by signs, most superficial, because his knowledge may end with knowing the kind of wood. The nurseryman by a glance merely at the fruit recognizes the different kind of apple trees in his orchard. Both, however, might utterly fail in an attempt to draw the tree, because its function, so far as they are concerned, has not demanded that close and specific observation which must precede any drawing.

The fact seems to be that most people see just enough of an object to enable them to dodge it. Very much observation, so called, results in nothing more than a mere consciousness of the *presence* of the object. No image of educative value is formed. It will be a surprise to any one to scrutinize closely the impressions received from an object, even after looking steadfastly at it for some time. He will find that he has been impressed chiefly by those characteristics and properties which indicate a particular function. Other characteristics and properties, no matter how important, lie indistinctly in the background of his consciousness, and it requires considerable effort, on returning to the observation, to bring them up to their proper relation in the image.

The great fault to be avoided, therefore, in planning and conducting work in observation is that of insisting upon the presentation of objects or parts of objects that make no appeal through their function. When this is done it is inevitable that the interest must be spurred on by factitious means which never come from honest purpose and never lead directly to real knowledge. Through this mistake, chiefly, arise all the difficulties pertaining to the various forms of expression.